

Lecture 18 2: 2nd Law & Universal Entropy

Note Title

11/1/2011

2nd Law: $\Delta S_{\text{rxn}} - \frac{\Delta H_{\text{rxn}}}{T} = \Delta S_{\text{univ}}$

$\Delta S_{\text{univ}} > 0$ pos rxn spont.
 $\Delta S_{\text{univ}} < 0$ neg non-spont.

$\Delta S_{\text{rxn}} > 0$ ☺_u
 incn. entropy

$\Delta H_{\text{rxn}} < 0$ ☺_u
 neg: exothermic
 S_{sur} increases

$\Delta S_{\text{univ}} > 0$ Always be spont.

$\Delta S_{\text{rxn}} < 0$ ☹_u
 decn. entropy

$\Delta H_{\text{rxn}} > 0$ ☹_u
 pos: endothermic
 S_{sur} cool off
 S_{sur} decreases

$\Delta S_{\text{univ}} < 0$ Always be non-spont.

$\Delta S_{\text{rxn}} < 0$ ☹_u

$\Delta H_{\text{rxn}} < 0$ ☺_u

$\Delta S_{\text{univ}} < ? > 0$ Dep. on Temperature
 exothermic spont.
 at low T

$\Delta S_{\text{rxn}} > 0$ ☺_u

$\Delta H_{\text{rxn}} > 0$ ☹_u

$\Delta S_{\text{univ}} < ? > 0$ Dep. on Temperature
 endothermic spont.
 at high T